

CLAIMS

[1] A combustion gas extraction probe for extracting a high-temperature combustion gas while cooling said high-temperature combustion gas with a low-temperature gas characterized by making said low-temperature gas flow in a direction that is substantially perpendicular to a sucking direction of the high-temperature combustion gas and is toward a center of a flow of said high-temperature combustion gas for mixed cooling.

[2] The combustion gas extraction probe as claimed in claim 1 comprising:
an inner tube in which the high-temperature combustion gas flows;
an outer tube surrounding said inner tube;
a low-temperature gas discharge hole provided in said inner tube; and
a low-temperature gas supply means for supplying the low-temperature gas between the inner tube and the outer tube, and discharging the low-temperature gas from the discharge hole into the direction that is substantially perpendicular to the sucking direction of the high-temperature combustion gas and is toward the center of the flow of said high-temperature combustion gas.

[3] The combustion gas extraction probe as claimed in claim 1 comprising:
an inner tube in which the high-temperature combustion gas flows;
an outer tube surrounding said inner tube and having a folded portion to cover a head of the inner tube;
a low-temperature gas discharge hole provided at a portion of said folded portion, said portion of the folded portion facing the high-temperature combustion gas; and
a low-temperature gas supply means for supplying the low-temperature gas between the inner tube and the outer tube, and discharging the low-temperature gas

from the discharge hole into the direction that is substantially perpendicular to the sucking direction of the high-temperature combustion gas and is toward the center of the flow of said high-temperature combustion gas.

[4] The combustion gas extraction probe as claimed in claim 2 or 3, wherein plurality of said low-temperature gas discharge holes are provided, and individual discharge holes are rotationally symmetrically arranged at substantially the same positions from a head of the probe in the high-temperature combustion gas sucking direction.

[5] The combustion gas extraction probe as claimed in claim 2 or 3, wherein plurality of said low-temperature gas discharge holes are arranged in stages in the high-temperature combustion gas sucking direction.

[6] The combustion gas extraction probe as claimed in one of claims 1 to 5, wherein flow speeds of the low-temperature gas and the high-temperature combustion gas are preferably not less than 40 m/s and not more than 100 m/s.

[7] The combustion gas extraction probe as claimed in one of claims 1 to 6, characterized by having a blaster injecting compressed air in an opposite direction to the sucking direction of said the high-temperature combustion gas at the head of the probe.

[8] A combustion gas treatment method using said combustion gas extraction probe claimed in one of claims 1 to 7 characterized in that regardless of amount of the high-temperature combustion gas extracted, amount of the low-temperature gas discharged is substantially uniformly maintained, and cooling gas is mixed again between an exit of said probe and an extracted gas disposal equipment in a rear stage of said probe to adjust said combustion gas to a predetermined temperature.